

Innovations in Public Health Workforce Development through Distance Learning: “If You Build It, They Will Come”

William J. Jamison

New Jersey Department of Health and Senior Services

Janice Taylor

Washington Department of Health

The U.S. health care system continues evolving at an unprecedented rate while public health shifts its focus to adapt to and anticipate these changes. Therefore, public health practitioners are in constant transition and need up-to-date knowledge and skills to deliver high quality services that reflect the rapid advances in science, medicine and health care. Experiences in New Jersey and Washington States provide examples of how distance learning is used to leverage partnerships and improve public health workforce development.

As the health care system continues to evolve, public health practice continues to change with it. The transition in practice over the past 10 years has brought many challenges to conventional training and education efforts. To meet these challenges a fundamental philosophical shift from an emphasis on providing training and education programs (outputs) to a focus on learner competency (performance and outcomes) is occurring in the public health workplace. Consider these examples of the current vernacular describing the educational and training environment:

- “Learning on demand”
- “Knowledge management”
- “Lifelong continuous learning”
- “Technologically smart environments”

These phrases are more than catchy slogans. They represent new directions in workforce development programs. Public health leaders are looking at new methods to improve the competency of the public health workforce and evaluate the results, rather than measure how many training programs are provided (Joint Council of Governmental Public Health Agencies, 1995). These efforts and energies are directed toward answering this question, “Is the public health workforce improving its competency to carry out its public health mission?”

While traditional training/education programs contribute toward achieving an outcome, they are not sufficient by themselves to improve workforce competency. If training and education programs cannot demonstrate that they contribute to improved job performance, they are less likely to be funded. Technology makes it possible to develop continuous learning (training) using a variety of learning support resources, instead of viewing training as a one-time event (Sitze, 1999, November).

Many factors have contributed to this philosophical shift. Perhaps the most important of these is the emphasis on “outcomes” and “performance” in publicly supported programs from a conflicted public that wants more with less (Institute Of Medicine, 1988). The emphasis on customer service and quality improvement has also contributed to the need to focus on outcomes and performance. (Scholtes, 1993)

Additionally, technology improvements have also had a profound influence on this philosophical change. While technology improvements have increased access to learning tools and resources that can help sustain training efforts, they have also contributed to staff feeling overwhelmed with information and misinformation.

In the current era of economic prosperity, government programs such as public health wrestle with constricted budgets and a shrinking pool of qualified workers who are often not adequately prepared to fulfill their roles. The workforce often struggles to weave their way through massive amounts of information and educational resources to get what they need, often, because they are in the public sector, with less sophisticated technology than that which is available to their corporate/private counterparts. Emerging infectious diseases, bioterrorism, and increased environmental health threats necessitate a workforce that is able to quickly retrieve information that can help them effectively protect the public’s health.

Moving from training/educational outputs to learner outcomes also shifts the focus from bringing learners to training sites to learn from experts, to designing learner based systems so that the workforce can access the information and training it needs, when it needs it and at their own base of operation. This kind of change effects both learners and instructors who need to adjust their own values and ideas about what constitutes effective education and training. (B.O., 1999, November). For example, will a worker who has been trained and educated in

the traditional instructor/classroom setting, feel confident and competent with self-directed learning systems and technology-based training (TBT)?

Merging information management with education and training is becoming a critical strategy to improving workforce competency at federal, state and local levels of the public health system. However, public health learners are not always ready to embrace TBT and if public health is truly going to adopt this new way of learning, there must be a concerted effort to address the tremendous cultural challenges that learning technologies present. (B.O., 1999, November)

Recognizing these workplace development changes the 1997 publication, *The Public Health Workforce: An Agenda for the 21st Century*, (U.S. Department of Health and Human Services, 1997) identified the following barriers to strengthening the public health workforce:

Inadequate knowledge about curriculum and competencies the workforce will need to meet future challenges

- Lack of formal education in public health
- Limited public health certification requirements
- Failure to use advanced technology to its full potential

Three primary recommendations are made to deal with these barriers:

1. Track workforce composition over time to:
 - define the public health workforce
 - identify/classify and enumerate the public health workforce
 - predict future estimates of workforce composition and supply
2. Use competency based curriculum to:
 - define competencies for the 10 essential services
 - develop curriculum focused on reassessment and retooling of the existing workforce
 - update and maintain curriculum
3. Develop distance learning systems to increase access to information and educational opportunities.

Several strategies have been employed at the federal level to begin addressing these barriers:

- In 1994, the national public health community adopted the ten essential public health services to define the functions of public health and included assuring the competency of the public health workforce as the 8th essential service. (Institute of Medicine, 1996)
- Workforce development is included in the Healthy People 2010 Objectives as part of infrastructure development.
(<http://web.health.gov/healthypeople/2010Draft/scripts/overview.cfm?/Chapname=pubhlth>, 4/15/99)
- Assuring competency of the public health workforce is included in the drafts of the national public health performance standards.
(<http://www.phhppo.cdc.gov/dphs/nphpsp/index.htm>, 8/7/99)

Within this context, state and local health jurisdictions are beginning to find new ways to address workforce development challenges. Many are working to strengthen ongoing partnerships while also developing new strategies to overcome the barriers cited above.

This paper uses the experiences in New Jersey and Washington States to demonstrate how distance learning and technology based learning is being used to leverage partnerships that will mitigate the identified barriers and improve public health workforce development. Strategies to address workforce composition, competency-based curriculum development and data collection for quality improvement are presented within the context of each state's environment.

Workforce Composition

Defining the composition of the nation's Public Health Workforce might best be characterized as "perpetual motion." For many years the public health workforce definition was restricted to those individuals employed by governmental health entities, primarily state and local health departments. Since the 1988 Institute of Medicine (IOM) report (IOM, 1988) which emphasized focusing on the *functional* aspects of Public Health, the definition of the workforce has broadened its scope (U.S. Department of Health and Human Services, 1997).

While there are still local and regional differences in definitions, many states and localities now define the public health workforce as those performing one or more of the essential public health services regardless of practice setting. The increased scope of this definition increases the challenge to track workforce composition over time and especially to develop effective and efficient workforce development strategies.

Although New Jersey and Washington are very different with respect to population size and density, definitions of public health workforce roles, and licensing/certification requirements, they both use distance learning and collaborative partnerships to meet these challenges.

For example, while the specific duties and requirements vary greatly, a commonly accepted role in any public health system is that of the *local health officer*. This essential public health occupation is viewed quite differently in the states of Washington and New Jersey. Although the title is identical, the job expectations, education requirements and responsibilities are distinctly different in each state. Nevertheless, distance learning has presented new opportunities to form state and local partnerships with academic institutions, other state agencies, hospitals and others to track workforce composition and to increase access to learning resources for the local health officer and other members of each state's public health workforce.

New Jersey New Jersey has more than 500 licensed Health Officers. Each local health department is required to employ a full-time licensed health officer, currently 116 individuals serve in this capacity. Health Officers in New Jersey are required to have an Masters degree and successfully complete a written examination for licensure. To maintain licensure, a health officer must complete 15 hours of approved continuing education courses, 8 hours which must be in leadership training per year. This requirement was established by statute, December 1997. In 1998, licensed Registered Environmental Health Specialists (formerly Sanitary Inspectors, First Grade) were also required to earn annual continuing education credits to maintain a current license (N.J.S.A. 26:1A-38).

The Office of Local Health, prior to 1999 routinely funded the development of special topic courses offered by various colleges and universities in the state and by public health associations. This was done in collaboration with a Public Health Professional Continuing Education Committee (PHPCEC), comprised of members of various professional health organizations in New Jersey. The PHPCEC serves as an advisory body to the Office of Local Health to recommend curriculum appropriate to health officers and registered environmental health specialists.

Prior to 1999, a few programs from the Centers for Disease Control and Prevention (CDC), Public Health Training Network (PHTN) delivered via satellite videoconferencing became the first distance learning programs pre-approved for New Jersey health officer and registered environmental health specialist continuing education and license certification. Subsequently, the Office of Local Health decided to systematically review distance learning programming produced by the CDC through the national Public Health Training Network (PHTN) for licensure renewal for three main reasons:

1. To expand the selection of courses and faculty
2. To provide a regional and national perspective
3. To improve access to education on leading public health issues

In partnership with the state distance learning coordinator, the PHPCEC, Cook College at Rutgers University, William Patterson University, and Stockton College, the Office of Local Health agreed to finance a pilot program to market specific distance learning programs to the state's health officers and registered environmental health specialists and other public health professionals. Three Regional Administrative Centers (RAC) were established to distribute distance learning course announcements to 21 county downlink sites.

As word spread about the network more sites became interested in offering "approved" courses via satellite. It soon became apparent that many sites were available to downlink satellite programming for a very small percentage of the public health workforce. While these programs combined with other more traditional classroom instruction, addressed the licensing needs of this specific segment of the public health workforce, there were many other public health professionals participating in these and other curricula, who did so without being required by statute.

These "other" health professionals that comprise New Jersey's public health workforce are, physicians, nurses, health educators, social workers, laboratory technicians, hospice and hospital workers, home health aides, educators, researchers, administrative assistants, office support staff and more. They account for nearly 97% of New

Jersey's public health workforce. Some of these workers may be required to accumulate continuing education credits or contact hours to maintain a license or certificate, but for the most part, they seek training and educational experiences and opportunities for other, less tangible reasons.

For example, nurses, who make up the most significant portion of the public health workforce also constitute one of the largest segments of participants in the distance learning programming offered in New Jersey despite having no specific requirement to do so. Only nurses who are certified in a board specialty, i.e. emergency, critical care, community health, etc., are required to take continuing education units for license renewal in New Jersey. With the increased availability of downlink sites it now makes sense to increase the marketing of distance learning programming to the rest (97%) of the state's public health workers.

Health Professionals and Institutions in New Jersey

Profession/Institution	Number	Source of Information
Licensed Health Officers	540	NJDOHSS
Reg. Environmental Health Specialists	2,503	NJDOHSS
Physicians	20,657	1998 County & City Extra *
Nurses	110,000	NJ State Nurses Association
Health Educators	200	NJ Society for Public Health Education
Local Health Offices	118	NJDOHSS
Hospitals	120	NJ Hospital Association

(Cook College Office of Continuing Professional Education, 1999, November)

To that end, partnerships are now developing with medical centers, vocational training centers, health departments, high schools, colleges and universities to provide downlink facilities and serve as local and regional distribution points for distance learning programs. State and local health organizations, such as, the New Jersey Public Health Association, various professional nurses' associations, college and university graduate programs are now being targeted for distance learning based curriculum. Courses approved for contact hours by the Office of Local Health are regularly posted within the department's web site. (<http://www.state.nj.us/health/lh/apprlist.pdf>)

For calendar year 1999, more than a dozen satellite videoconferences were approved for health officer and registered environmental health specialist licensing and continuing education in New Jersey. Program evaluations and registration information gathered at these course offerings provide feedback not only on the quality of and suggestions for future programming, but also provide information about who is attending these programs. It is likely that as attendance increases and includes a broader spectrum of the public health workforce, evaluating the relevance of programming, setting standards for future productions and better tracking of the workforce composition will result.

Washington In contrast to New Jersey, there are only 30 local health officers (LHOs) in Washington State, for 34 local health jurisdictions. Washington statute requires that LHOs be physicians licensed to practice medicine and surgery or osteopathy and surgery *AND* hold a Master's of Public Health (MPH) degree or its equivalent. Washington's LHOs are *NOT* required to be certified or to take continuing education credits beyond that required by licensure as a practicing physician. However, LHOs who do not meet the MPH requirement must undertake three years of service as *provisionally qualified* LHOs that includes an orientation to public health and evaluations by the Secretary of Health (Chapter 70.05 RCW).

Although many Washington LHOs have completed MPHs, few new health officers feel prepared to assume the full range of job responsibilities when first entering the position. Given the rapid turnover in local health staff in Washington, an orientation to public health, on-the-job training, mentoring and readily available resource and reference materials would be helpful to ALL new public health staff.

In a 1997, the University of Washington's Northwest Center for Public Health Practice (NWCPHP) collaborated with the Washington Department of Health (DOH) to conduct research to profile and assess the training needs of the public health workforce in Washington. A key finding indicated that although the distribution of public health professionals varies among organizational settings, the training needs within these organizations and among professional groups are similar (Gale J, Reder S, 1998).

A sample of public health professionals in Washington State that completed a 1997 survey indicated that almost 75% of respondents were licensed, certified or registered in a health-related specialty. Further examination of

the distribution of occupational categories shows the greatest number, 29% falling into the category of medical clinicians (MD's, RN's) and the second highest category, 18% in the non-medical clinician category (psychologists, social workers) (Gale J, Reder S, 1998).

Both findings indicate a high level of certification among Washington's public health workforce, particularly since some of the respondents are in fields (e.g. health planning) that, like New Jersey, do not have licensure or certification. This may contribute to the lack of interest for any additional public health certification or requirements since most health licenses require some form of continuing education already (Gale J, Reder S, 1998).

While these findings are important, it is the collaboration among the public health partners and the availability of technical tools that have been critical to tracking workforce composition in Washington. Limitations of resources to conduct this kind of research have suggested the need for collaboration, but the rapid development of technical tools that integrate communication, information and education made this possible.

In partnership with the NWCPHP, Washington DOH developed the Washington Public Health Training Network (WAPHTN), an electronic network of approximately 150 public health staff who serve as liaisons with their organizations to share information about public health education and training opportunities. While some of these opportunities reflect conventional classroom training, most are now based in distance learning. Satellite programs produced by the Centers for Disease Control through the national Public Health Training Network (PHTN) predominate, but increasingly, web based, computer based and other forms of distance learning are also being developed, shared and utilized. Future tracking of workforce composition is most likely using this network because of the ease of distribution of survey and data collection tools to determine learning needs and evaluate effectiveness.

This system is effective because most members of the network have technical access and are able to link to one another and their colleagues through the public health Intranet. Because this Intranet was created using accepted technical standards for the Internet, other public health partners are also able to communicate through this network. The technical systems being used as learning supports for distance learning must not only integrate functions but must also be *interoperable*. *Interoperability* cannot be achieved without working together on systems development and maintenance. The importance of technical interoperability and collaboration continue to contribute to enhancing the ability to track workforce composition.

Competency Based Curriculum

The criteria for defining the public health workforce has shifted from where the workforce does its work (i.e. governmental health jurisdictions) to what it is doing, by including all those who provide one or more of the ten essential services regardless of the practice environment. Similarly, curriculum development is changing to reflect public health's shift to this more functional approach. Rather than emphasizing *who* (e.g. nurses, physicians, dentists, social workers etc) is doing the work, the primary focus is on the competencies necessary to perform the ten essential services (*what*) (U.S. Department of Health and Human Services, 1997).

The aggregate public health workforce is diverse and disparate in age, experience, education level, certification, access to financial, technological and information resources, and working environment. Furthermore, any training or re-tooling of the public health workforce needs to be developed after taking into account the needs and demographics of the learners and the ability of the learners to access and apply that learning.

These circumstances contribute not only to the difficulty in defining the composition of the workforce, but also complicate structuring and delivering effective "one size fits all" curriculum. While the quote below reflects the experience of the National Open University in Taipei, it also reflects criticism from the public health workforce in this country.

...the design of traditional college and university schooling is conceptually limited, and has as its primary foundation and method of teaching a focus on younger adults. Older learners are not attracted to and do not do learn effectively in this type of environment. As well, conventional colleges and universities seldom teach applied, practical knowledge that relates to on the job skills. More significantly, conventional colleges and universities are limited in location and time, making it impossible for working adults, the rural population, and disadvantaged groups to access these institutions. Adults need an educational system that has the flexibility and diversity, including breadth and depth, to provide advanced education for everyone. The most obvious and effective solution is distance education (Huang, Judy. 1999, pp.1-2)

This statement is not intended to imply that conventional university education is of no value. However, when training and education strategies are being considered to *re-tool* an *existing* workforce that tends to be older and geographically dispersed, other methods must be considered for both curriculum design and delivery to be effective. Designing competency-based curriculum that is tied to the 10 essential services attempts to address the

lack of applied, practical knowledge related to job skills that has previously been a criticism of public health education and training efforts by focusing on competencies that are functional and more job related. The delivery of new public health curriculum is being designed for delivery through distance education mediums to provide the flexibility necessary to meet adult learning needs of a diverse workforce.

New Jersey To define and prioritize competencies related to the 10 essential health services, a consortium of academic, government and public health practitioners from New Jersey, Pennsylvania, the Northeast Regional Public Health Training Project and the Northeast Public Health Leadership Institute, studied the training needs of local and state level public health professionals. Once priorities were determined, curricula emphasizing distance-based, as well as, traditional learning was discussed. Distance accessible technologies were considered essential for several reasons, including the need to reach a rural and geographically dispersed workforce.

While it is important that functions and activities, not merely professional titles, should determine the need for training to build skills and competencies, curriculum that is based primarily on the ten essential services must also be integrated with those based on professional disciplines. Although there are many similarities among professionals in relation to the 10 essential health services from a functional perspective, the specific skills or competencies needed to carry out these services vary greatly depending age, experience, professional backgrounds, role within the agency and other factors.

The study of training needs found certain professions, public health nurses, health educators and health services managers, were almost universally viewed as high priority occupations for training. However as we have seen in Washington and New Jersey, the title "health officer" has different meanings, qualifications and professional expectations, so it is important to gain agreement on definitions of these professional categories before any curriculum design or delivery is begun.

Competency based curriculum design continues to be developed for these and other allied health professions recognizing that skills and competencies should be customized for each occupation. The Pennsylvania & Northeast Regional Public Health Training Project further concludes that supervisors, in conjunction with their employees, should verify training needs and design curriculum accordingly.

Washington As in New Jersey, Washington State DOH has also worked with academic institutions, representative staff of state and local health and the Area Health Education Centers (AHECs) to identify public health competencies. Initially, in 1995, these competencies were developed based on the 1994 Washington Public Health Improvement Plan ([http://healthlinks.washington.edu:443/nwcp/h/waphtn/#Education and Training](http://healthlinks.washington.edu:443/nwcp/h/waphtn/#Education%20and%20Training)). When the state public health standards are finalized in the first quarter of 2000, efforts will be underway to update these competencies in light of the state public health standards.

In addition to identifying competencies, Washington is also testing the orientation process for LHOs. This process is based on actual job responsibilities as reported by the LHO group. It is important to note that although the orientation process includes training, it is more comprehensive in its approach. These processes have the desired result of providing learning support so that a new LHO has enough preparation to quickly and independently assume job responsibilities in the local environment, without spending too much time away at training. Since there are only 30 LHO's at any given time in Washington, the process is also designed to be customized to the needs of the individual LHO, in large measure due to the low numbers of new LHO's coming into the system. The prototype includes the following steps:

1. Seven major focus areas of learning have been identified from a 1998 survey of LHOs to identify current job responsibilities: *public health practice, infectious disease, environmental health, epidemiology/assessment, management/leadership, relationships with key people/groups, communications*
2. Four learning approaches have been selected to allow maximum flexibility to meet individual needs over the 3 year period specified by statute, Chapter 70.05 RCW: *meetings with key people* at both state and local levels (e.g.. State Health Officer, County Attorney etc); *mentoring* with a more experienced local health officer; Selecting learning tools from *a menu of existing learning resources* (e.g.. references, written materials, and activities such as training); On-line learning resources through an LHO web page. (A temporary URL has been assigned for development: <http://healthlinks.washington.edu:443/inpho/lho/index.html>. The pages are part of the Washington State INPHO-Information Network of Public Health Officials-the public health Intranet site maintained by the NWCPHP.)
3. An evaluation of the process will occur at the end of each year both by individual LHOs and mentors as well as by the WSALPHO Local Health Officer group to determine effectiveness and identify areas for process improvement.

With few state training funds available, this process could not have been developed without the collaboration of DOH with academic and local partners or the availability of technology based learning methods.

Distance Learning Systems

"Public health workers require the ability to acquire and apply theoretical and analytical knowledge and the habit of continuous lifelong learning to remain viable and productive" (U.S. Department of Health and Human Services, 1997). Because distance learning delivery systems can provide the need for immediate and continuous access to information, they are critical tools in strengthening workforce performance that public health can no longer ignore.

The explosion of the Internet and the World Wide Web offer immediate and continuous access to information and at the same time provide so much information that it must be sifted, sorted and verified. Satellite videoconferencing can transport expert faculty with newly discovered information into thousands of classrooms in front of tens of thousands of health professionals. In this environment they can converse, share data, agree or disagree via phone, fax or electronic mail. In combination with other media, learners can participate in even more intimate face to face dialogue through PC videostreaming or 2-way video conferencing. Internet based class list serves or private chat rooms can give learners the opportunity to compare notes on a presentation prior to testing and curriculum evaluation on a designated website.

While much of this technology exists, how much of it is available to the public health learner? Corporations, private industry and academia have been in the vanguard in the practical application of these emerging technologies. While the public health workforce, has often not had its own resources to make optimum use of distance accessible technology, collaboration and partnerships with other community resources are making access to distance learning systems more frequent in both New Jersey and Washington.

New Jersey The public health workforce in New Jersey has been able to participate in satellite distance learning programs almost entirely because of partnerships and cooperative agreements with other community resources. PHTN and other distance learning announcements are distributed to potential downlink sites and health professionals by the state distance learning coordinator. In 1996 a letter of Agreement between the New Jersey Department of Health and the Ocean County Health Department formalized the ocean county site as the first site regularly available for downlinking satellite conferences. Currently hospitals, medical centers, universities and colleges have joined this network and also provide access to their respective sites.

Additional partnerships are forming with the state operated public television network, and university graduate programs in public health, as well as certain corporations and pharmaceutical foundations to increase access to satellite downlink sites and emerging technologies, such as interactive video conferencing and computer-based training.

Academic institutions offer great promise for cooperation. These settings provide distance accessible infrastructure to the public health sector with the added benefit to their students who interact with "field savvy" professionals during learning situations. Distance learning program information is now delivered electronically to one professor of health services at a state university for inclusion in graduate curriculum. All distance-based programming is also posted on the department's web site (<http://www.state.nj.us/health/distance>).

Washington With no downlink sites of its own either at the state or local level, Washington DOH has also made PHTN programs available to over 7000 participants in the 1997-1999 biennium. Partnerships with other state agencies, educational institutions, and hospitals willing to provide sites for programming enable the workforce to attend satellite broadcasts. The state public library system has recently emerged as a new partner for local health jurisdictions.

Washington DOH also has access to a fully functioning Intranet that links local health with one another and the state. Because this Intranet now serves as the backbone for the K-20 program, new partnerships are forming at the local level for increased access to land-based videoconferencing as well as satellite downlink sites.

These partnerships have been successful because of the interest in providing access to additional programming for their own stakeholders. At the local level these programs have often served as useful community mobilization tools. For example, in 1997, more than 1100 people at 25 sites attended a program about domestic violence. This broadcast was able to bring together members from law enforcement, schools and hospitals to deal with this issue. While the use of distance learning as a tool for building these relationships was unintentional, it is now also valued for this kind of community leveraging.

Data Collection for Quality Improvement

The creation of the national PHTN, concentrated on developing a network to make programming available to the largest number of public health workers at the national and state levels. As the network and technology has

developed and continues to expand there is an expectation to provide public health programs of quality, both in content and production value. Programs must be timely, relevant and demonstrate effectiveness as learning tools for the outcomes they seek to achieve. As the types of mediums increase and the number of programs grow, so will the number of participants and the expectations of managers and administrators supporting participation in distance learning. Systematic data collection is necessary to evaluate both impact and effectiveness to improve both the quality of learning methods and the performance of the workforce. New Jersey and Washington have begun collaborating as they develop these systems in each state so that data can be compared and analyzed.

New Jersey Early efforts at collecting data simply tracked the number of participants and asked about the usefulness of satellite videoconferencing, and allowed for suggestions on future programming. Survey samples were small since the network was in its infancy and the medium (satellite) was novel.

Data collection for satellite programming today centers on evaluating specific course objectives, usefulness of handout and supplemental materials, program pace, and appropriateness of the on-site facilities. The demographics of participants are broken down to track specific professions and reasons for taking a course (Continuing Education Units, etc.). This information is necessary for verifying health officers and registered environmental health specialists completing required contact hours for license renewal. It also provides an extremely valuable picture of others attending these programs and provides more shape to the composition and needs of the public health workforce. On line registration is now available for some satellite courses and this will provide additional program and participant data. As new mediums for delivering courses (especially web based) become available, similar evaluation mechanisms will be used.

Producers and designers of learning systems can rely on this information to improve course development and content. This is a critical step in the process if this is to be a learner driven system. "If you build it they will *NOT* come", unless the demand for better quality and relevance is taken into account. The system will collapse from lack of interest and support from upper management. Just building the system is no longer enough.

Washington Similar to New Jersey, early efforts at data collection were limited to collecting statistical information centered on the number of participants attending satellite broadcasts with crude attempts to identify demographics. Washington DOH has just developed an on-line registration system that feeds information into a newly created database. This system will be on-line in January 2000. With this database, more timely and accurate demographic data will be available to evaluate effectiveness and impact for all learning programs including more conventional classroom experiences.

The authors, as distance learning coordinators in New Jersey and Washington, routinely correspond with each other and with distance learning coordinators from other states who serve as team leaders at the national level to identify critical data elements. Current activities include efforts to arrive at consensus on core indicators to assure the data collected is useful. Distance learning technology brings many opportunities, but building an effective learning system requires more than technology to be effective. It requires a conscientious and consistent effort to embrace new partnerships from government, corporate and academic quarters, especially those who have experience in distance learning. Furthermore, effective use of distance learning technologies and lifelong learning systems will require that decision-makers recognize the desire by the workforce to be informed, effective and responsive and a commitment to provide the technologies and the opportunities to make that possible.

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